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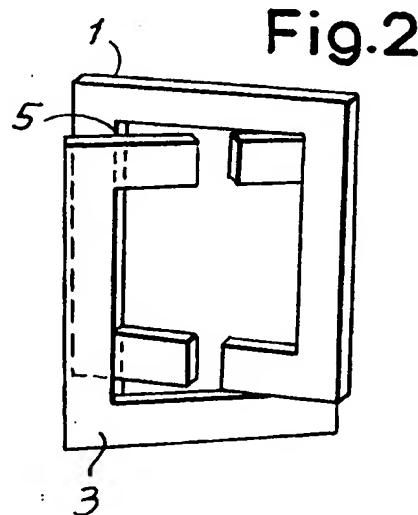
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(54) Decorative chain called rope chain, obtained using "C"-shaped components stamped out of thin sheet.

(57) A decorative chain of the type called "rope chain", formed from pairs of open, that is to say "C"-shaped links 1 and 3, the two links of each pair being interconnected in opposite positions, slightly staggered and crossed in relation to one another, and soldered thus; the links of one pair engage those of adjacent pairs; according to the invention, the links are produced from stamped-out thin sheet.



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The invention relates to a method for the production of a particular decorative chain, of the type known as "rope chain", as well as a chain - usually decorative - of the abovementioned type called "rope chain", formed from pairs of open ("C" -shaped) links, the two links of each pair being interconnected in opposite positions, staggered and crossed in relation to one another, and soldered thus, the links of one pair engaging those of adjacent pairs.

Chains of this type thus far have been produced using filiform material which is profiled to a greater or lesser extent and which is wound on a mandrel in order to form a plurality of spirals; these are then, by means of mechanical working, cut by means of a longitudinal cutting operation in order to form the individual open, that is to say "C"-shaped links for the formation of the double links of the chain; the section can also be a section which is hollow for reasons of lightness with the same volume, which is important for the production of chains using precious metals. Moreover, the working becomes expensive and is limited to particular shapes of the individual link and therefore of the whole of the chain, precisely because of the nature of the starting material and of the working which this material undergoes. In particular, sharp angles are not possible in the links, and surface working is not possible, unless very limited, because of the difficulty of working both on the starting material and on the open-link pieces produced using this starting material.

The invention relates to a procedure and a chain of the "rope chain" type, which excludes these abovementioned and other limitations of chains of this type and of traditional shape, and makes it possible to achieve advantages which will become clear from reading the following text.

A rope chain according to the invention essentially comprises links which are produced from stamped out thin sheet, and are thus capable of being given shapes as can be obtained using the technique of stamping out.

Another subject of the invention is a procedure for producing a chain of the type called "rope chain", formed from pairs of open ("C"-shaped) links, the two links of each pair being interconnected in opposite positions, staggered and crossed in relation to one another, and soldered thus, the links of one pair engaging those of adjacent pairs; according to the invention, the procedure envisages the formation of the "C"-shaped links by stamping out from thin metal sheet, usually precious metal.

Evidently, by using a thin metal sheet as starting material rather than a continuous metal section, all the working which is required in order to transform a linear element into an open "C"-shaped link is spared and therefore the winding onto a mandrel and the cutting of the spirals formed on said mandrel is spared. Furthermore, a very easy possibility is obtained for fash-

ioning the individual links in the most various manners and very simply by using shaped stamping-out tools, and in particular with the lateral external edges shaped by stamping out. Starting with a sheet material also makes it possible to obtain on the surfaces of the individual links a brightness which is not easily obtainable using filiform starting material. Furthermore, it is possible to obtain shapes of the links with very sharp corners also and without those limitations which are imposed on the other hand by filiform material, in particular by hollow filiform material. The links can be obtained from relatively very thin sheet in order to obtain a great difference between the thickness and the dimensions of the link in the plane of lying of the link itself, with all the advantages which can derive therefrom from the esthetic point of view.

The working procedure for stamping out permits working even of relatively very small links, which would not be easily obtainable using the conventional working system from filiform material wound in spirals and cut.

Working is to a great extent mechanizable.

These and other aims and advantages will become clear from reading the following text.

The invention will be understood more clearly by following the description and the attached drawing which shows a practical non-limiting example of the invention itself. In the drawing,

Figs 1 and 2 show a double link in two views,  
 Fig. 3 shows a link component shaped by stamping out,  
 Fig. 4 shows in an external view a portion of chain,  
 Fig. 5 is a demonstrative cross-section along V-V of Fig. 4, and  
 Fig. 6 shows an external perspective view of a length of chain.

According to what is illustrated in the attached drawing, and in particular in Figs 1 and 2, a link for a rope type chain is produced using two "C"-shaped link components indicated by 1 and 3, usually of almost rectangular development, and open on one internal side, which permits the mutual connection of the two links 1 and 3, as shown in said figures, and that is to say with a slight mutual stagger, with an opposite orientation of the two openings and with a crossed positioning of the two links which are then soldered at 5 along the parallel and adjoining sides of the links themselves.

A component 11 like those 1 and 3, produced according to the invention, is shown in Fig. 3, in which it can be clearly seen that the component can be stamped out from band N or from thin sheet, and each stamped-out link element 11 is evidently of a sheet thickness corresponding to that of the starting material N, shaped like the stamping-out tool and therefore without particular limitations even of angling and of peripheral profiling of said link elements 11. The links are obtained either undeformed in the plane of

stamping out or even deformed in the desired manner, all by means of mechanical working which is also simultaneous with the stamping out. The dimensions in the principal plane of lying of the link can be greatly increased in relation to the thickness of the link, which is that of the band-like or other starting sheet material N.

The principal surface of the link can be produced using special working for a polish which is maintained even after working. The external edges, in particular the longitudinal edges 11A which are adjacent to the edge which is interrupted for the formation of the C shape, can be shaped expediently using knurling, stamping out with saw teeth or other in order to achieve particular esthetic effects which are easily visible in the assembled rope chain, and also so as to mask possible corner differentiations as are necessarily caused by the stamping out which leaves one corner with a tendency to rounding and another corner with a tendency to burr; this disadvantage is completely eliminated from the point of view of visibility by carrying out the shaping along the more visible edges 11A of the chain. With formation by means of stamping out, there are no limitations to the shaping of the link elements 11, because these are cut, that is to say stamped out, and are not fashioned on a mandrel like the link elements formed using the conventional system. Relatively very sharp angles are therefore also obtained, as are possibilities for varying the section of the various zones of the link without any limitation from the point of view of working, and only with the limitations which can be imposed by the assembly of the final rope chain using these stamped out elements 11.

As can be seen in Fig. 4 also, the edges 11A of the stamped-out elements 11 are visible in a helical progression of longitudinal segments which is formed by the chain illustrated as finished, while the transverse surfaces 11B of the front of the stamped-out element 11 come to be visible in the development of the helical channel of the formed chain, and since these transverse pieces 11B come to be arranged progressively inclined in relation to one another along a helical progression, the polish which is possible with the starting sheet material comes to give an effect of brightness and of reflection which is particularly valuable from the esthetic point of view and which is not easily obtainable on the filiform materials which have been used until now with the technique of preparation of said rope chain. The stamped-out elements are particularly simple to obtain using the system of working according to the invention.

The considerable radial extension of the longitudinal sides, that is to say those provided with the possible edge working 11A, makes it possible greatly to reduce the visibility of the soldering 5 between said sides in the links formed by the two opposite elements 1 and 3 in Figs 1 and 2. This is another advantage of

obtaining the rope chain from stamped-out and thin sheet material, while in the traditional rope chain the soldering tends to be visible and give rise to the presence of visible surface irregularities.

It is clear that all these advantages are obtained directly with lower costs than those which must be borne with the traditional system of working of the linear material to be wound in a helix and to be cut.

Many types of shapes of the edges 11A can be envisaged, with zig-zag cuts, with cutting of concave lunettes, with cutting of convex or any other type of lunettes, in order to bring about particular effects which are also very marked and without having to intervene with further working which is sometimes limited because of the requirements of the starting material of the traditional technique.

It is intended that the drawing only shows an exemplary embodiment which is given only by way of practical demonstration of the invention, it being possible for this invention to vary in form and arrangement without moreover leaving the scope of the idea which forms the invention itself.

## Claims

1. A procedure for producing a chain of the type called "rope chain" and formed from pairs of open ("C"-shaped) links, the two links of each pair being interconnected in opposite positions, and in part inclined, staggered and crossed in relation to one another, and soldered thus, the links of one pair engaging those of adjacent pairs, wherein the formation of the "C"-shaped links is brought about by stamping out from thin metal sheet, usually precious metal.
2. The procedure as claimed in claim 1, wherein at least some of the links are stamped out, along at least one of the external edges, with a shape for esthetic requirements and to attenuate the visibility of the corners of the stamping out.
3. The procedure as claimed in claim 1 or 2, wherein the surfaces of the sheet material, in particular bandlike, are polished before stamping out.
4. The procedure as described and illustrated.
5. A decorative chain of the type called "rope chain" and formed from pairs of open ("C"-shaped) links, the two links of each pair being interconnected in opposite positions, and in part inclined, staggered and crossed in relation to one another, and soldered thus, the links of one pair engaging those of adjacent pairs, wherein the links are produced in stamped-out manner.

6. The decorative chain as claimed in claim 5, which has, in at least some of the links and in at least one of the edges which are longitudinal - in the assembled chain - and parallel to the soldering, shapes which interrupt the linearity of the edges. 5
7. The decorative chain as claimed in claim 5 or 6, wherein one or each frontal surface of a component of the link is bright.
8. The decorative chain as described and illustrated.

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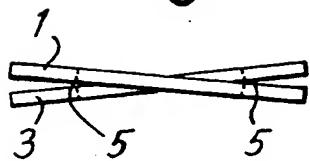
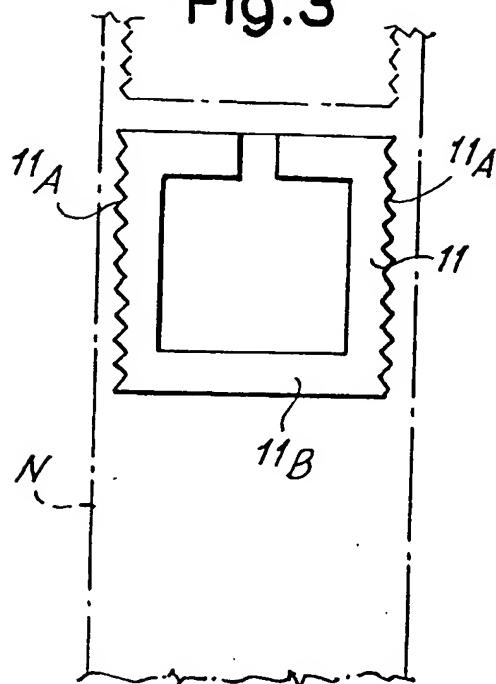
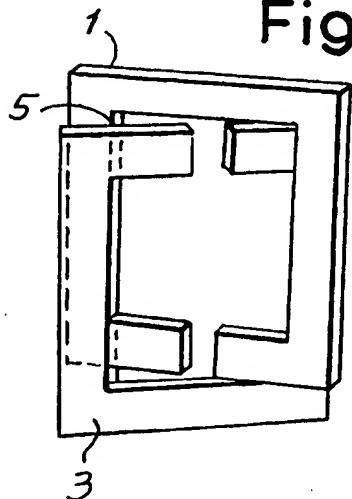
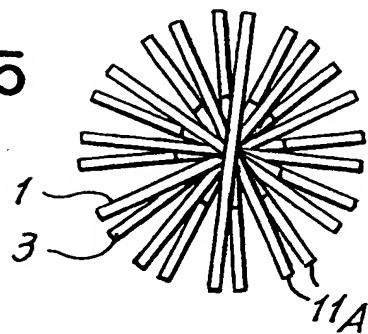
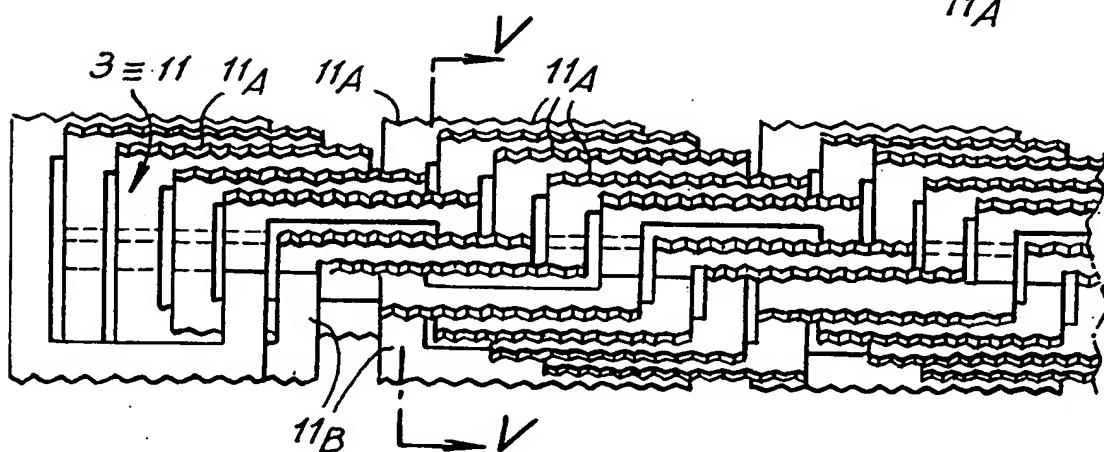
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**Fig. 1****Fig. 3****Fig. 2****Fig. 5****Fig. 4**



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## EUROPEAN SEARCH REPORT

Application Number

EP 91 83 0332

DOCUMENTS CONSIDERED TO BE RELEVANT		Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. CL.5)
Category	Citation of document with indication, where appropriate, of relevant passages		
A	GB-A-2 178 941 (ORDAMERICA INC.) * claim 1; figures 8, 13 *	1	A44C11/00
A	GB-A-1 587 500 (HOWARD AND IRVING JEWELLERY LIMITED) * page 2, line 9 - line 24 *	1	
A	DE-C-235 980 (WACKER AND HILDENBRAND)		
A	WO-A-8 604 491 (L'OROMECCANICA S.P.A.)		
		TECHNICAL FIELDS SEARCHED (Int. CL.5)	
		A44C B21L	
The present search report has been drawn up for all claims			
Place of search THE HAGUE	Date of completion of the search 15 NOVEMBER 1991	Examiner FAIRBANKS S.A.	
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